

# PREFACE

This book provides a basic, conceptual-level description of engineering management disciplines that relate to the development and life cycle management of a system. For the non-engineer it provides an overview of how a system is developed. For the engineer and project manager it provides a basic framework for planning and assessing system development.

Information in the book is from various sources, but a good portion is taken from lecture material developed for the two Systems Planning, Research, Development, and Engineering courses offered by the Defense Acquisition University.

The book is divided into four parts: *Introduction*; *Systems Engineering Process*; *Systems Analysis and Control*; and *Planning, Organizing, and Managing*. The first part introduces the basic concepts that govern the systems engineering process and how those concepts fit the Department of Defense acquisition process. Chapter 1 establishes the basic concept and introduces terms that will be used throughout the book. The second chapter goes through a typical acquisition life cycle showing how systems engineering supports acquisition decision making.

The second part introduces the systems engineering problem-solving process, and discusses in basic terms some traditional techniques used in the process. An overview is given, and then the process of requirements analysis, functional analysis and allocation, design synthesis, and verification is explained in some detail. This part ends with a discussion of the documentation developed as the finished output of the systems engineering process.

Part three discusses analysis and control tools that provide balance to the process. Key activities (such as risk management, configuration management, and trade studies) that support and run parallel to the system engineering process are identified and explained.

Part four discusses issues integral to the conduct of a systems engineering effort, from planning to consideration of broader management issues.

In some chapters supplementary sections provide related material that shows common techniques or policy-driven processes. These expand the basic conceptual discussion, but give the student a clearer picture of what systems engineering means in a real acquisition environment.